

Positional Variations of Ukrainian Back Vowel Formants

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Abstract

The purpose of this paper is to study variations in the location of formants of Ukrainian back vowels caused by different phonetic features. To do so, the oscillograms and two-dimensional spectrograms of recorded sounds in speech flow were analyzed. The corresponding invariant acoustic parameters being the ratios between frequencies of the formants rising due to the tube resonance are determined. It is shown that different phonetic environments cause different formant configurations in vowels which is a case of sound assimilation. The following phonetic features were found to give rise to variations of Ukrainian back vowels: coda, distant assimilation by the next or preceding vowel, and progressive assimilation by the preceding hard or palatalized consonant. In particular, high vowels make the other vowels in the phonetic word move higher, and the front ones make the back ones move forward. Such formant shifts are more pronounced in unstressed positions and especially in a coda.

Keywords: Ukrainian back vowels, formant frequency ratio, invariant acoustic parameters, formant shift, sound assimilation